

CURRICULUM VITAE

ELIAS A. ZERHOUNI, M.D.

PRESENT POSITION:

May 2002-present, Director
National Institutes of Health

EDUCATION AND TRAINING:

1968-1975, M.D., University of Algiers School of Medicine - Algeria

Postgraduate Training:

1975-1978, Residency in Diagnostic Radiology
The Johns Hopkins University School of Medicine
Department of Radiology

1977-1978, Chief Resident
The Johns Hopkins University School of Medicine
Department of Radiology

Medical Licenses:

Maryland D-21889
Virginia-32866 (Inactive)

Board Certification:

American Board of Radiology, 1980

Academic Appointments:

1978-1979—Instructor
Department of Radiology
The Johns Hopkins University School of Medicine

1979-1981—Assistant Professor
Department of Radiology
The Johns Hopkins University School of Medicine

1981-1983—Assistant Professor
Department of Radiology
Eastern Virginia Medical School

1983-1985—Associate Professor

Department of Radiology
Eastern Virginia Medical School

1985-1992—Associate Professor
Department of Radiology
The Johns Hopkins University School of Medicine

1992—Professor of Radiology
Department of Radiology
The Johns Hopkins University School of Medicine

1995—Professor of Biomedical Engineering (Secondary)
Department of Biomedical Engineering
The Johns Hopkins University

1996-present—Chairman
Department of Radiology
The Johns Hopkins University School of Medicine

1996-1999—Executive Vice Dean, Vice Dean for Clinical Affairs and
President of the Clinical Practice Association
The Johns Hopkins University School of Medicine

1999-2000---Vice Dean for Research
The Johns Hopkins University School of Medicine

2000-2002---Executive Vice Dean
The Johns Hopkins University School of Medicine

Professor of Radiology and Biomedical Engineering (Secondary)
Chairman
Russell H. Morgan Department of Radiology and Radiological Science
The Johns Hopkins University School of Medicine

Hospital Appointments:

1978-1981—Assistant Director, Body CT
The Johns Hopkins Hospital

1982-1985—Vice-Chairman and Director, Body Imaging Section
De Paul Hospital, Eastern Virginia Medical School
Norfolk, VA

1985-1988—Co-Director, MRI and Body CT
Coordinator of Clinical Research
The Johns Hopkins Medical Institutions

1988-1996—Director, Divisions of Thoracic Imaging and MRI
Department of Radiology
The Johns Hopkins Medical Institutions

1996-present—Radiologist in Chief, Johns Hopkins Hospital

[May 1991-June 1992—Leave of absence from Johns Hopkins University,
Director, Advanced Medical Imaging Institute, Norfolk, Virginia]

Honors and Awards:

The American Roentgen Ray Society—
Gold Medal Award for Scientific Exhibits

1985—Air Contrast CT

1987—High Resolution CT of the Lung

Paul Lauterbur Award for MRI Research
1989—Cardiac Tissue Tagging by MRI

Frank T. McClure Fellowship Award
1990-1992—Cardiovascular Disease Research

Paul Lauterbur Award for MRI Research
1993—The Dependence of MRI intensity on Blood Oxygenation in the Isolated
Arrested Blood-Perfused Rabbit Heart.

Centennial Speaker—Royal Swedish Society of Radiology, "MRI of the Heart—
3 Dimensions & New Dimensions," Stockholm, Sweden, September 15-16, 1995.

Fleischner Society Medal
1997—London—Functional MR and CT Imaging of the Chest

Elected Fellow of the International Society for Magnetic Resonance in Medicine—1998

Opening Session Speaker—Radiological Society of North America, “Functional
Cardiovascular MRI,” November 29, 1998

Keynote Lecture—Garmisch Meeting, “Radiology Research: Trends in the Early 21st
Century,” Munich, Germany, January 28, 1999

Merrill Sosman Lecturer, “Perspectives in Cardiovascular Magnetic Resonance
Imaging,” Harvard Medical School, Boston, MA, March, 2001.

PROFESSIONAL ACTIVITIES:

Societies:

American Roentgen Ray Society
Radiological Society of North America
Society of Thoracic Radiology (founding member)
Society of Computed Body Tomography (by election, 1985)
Association of University Radiologists
Fleischner Society (by election, 1987)
International Society for Magnetic Resonance in Medicine (Member, Board of Trustees 1995-1998)
American Heart Association
American College of Radiology
American Association for the Advancement of Science
Baltimore City Medical Society
Medical & Chirurgical Faculty of Maryland
North American Society for Cardiac Imaging
Society for Cardiovascular Magnetic Resonance
Society for Chairmen of Academic Radiology Departments
Institute of Medicine of the National Academy of Sciences (by election, 2000)

Editorial Affiliations:

Radiology—Associate Editor, Chest Section (1983-1990)
Journal of Thoracic Imaging—Associate Editor and Member of the Editorial Board(1990-1997)
Journal of Surgical and Radiological Anatomy—Associate Editor/Member of the Editorial Board (1980-1986)
Topics in Clinical MRI—Member of the Editorial Board (1990-1996)

Committees (Current Only):**Johns Hopkins:**

Institutional Committee for Nuclear Magnetic Resonance (Chair)
Executive Committee, Johns Hopkins Medicine (1997-present)

Clinical Practice Association Board of Governors{ TC \I1 "}

Scientific Advisory Council, Johns Hopkins Medicine

Non-Johns Hopkins:

Member, Academy of Radiology Research Board of Directors (appointed 1996)
Member, Board of Review Committee, GE-AUR Academic Fellowship Program (1996-Present)
Member, Scientific Advisory Board, Surgi-Vision, Inc.
Nominating Committee, International Society for Magnetic Resonance in Medicine
Member, NCI Board of Scientific Advisors (appointed 1998)

Consulting:

National Cancer Institute
World Health Organization, Geneva, Switzerland
The White House, Washington, D.C. (1985-1988)

RESEARCH ACTIVITIES:

Active Support:

NIH/National Heart, Lung, and Blood Institute—RO1-Hl 45090
Dynamic 3D Tagged MRI of the Cardiac Cycle in Ischemia
7/1/90–6/30/00—\$1,595,464 (direct costs)
Elias A. Zerhouni, Principal Investigator (15%)

NIH—1P50 HL 52315
Metabolic Characterization of Reperfused Dysfunctional Myocardium
1/1/96-12/31/99—\$912,260
Lewis C. Becker, M.D., Principal Investigator
Elias A. Zerhouni, Co-Investigator (5%)

NIH RFP NIH-AG-95-05
BLSA Prostate Study
9/1/95-9/29/04—\$869,792 (direct costs)
Elias A. Zerhouni, M.D., Principal Investigator (5%)

NCI—T32CA09630-10
Research Training in Oncology Imaging
8/1/89-9/29/02—\$663,440
Elias A. Zerhouni, M.D., Principal Investigator (5%)

NIH—T32HL077120-04
Research Training in Interventional Radiology
7/1/95-6/30/00—\$536,814 (direct costs)
James Anderson, Ph.D., Principal Investigator
Elias A. Zerhouni, Co-Investigator (5%)

Funded Research Completed:

NIH/National Cancer Institute—UO1-CA45202
9/87-6/92—\$745,000 (direct costs)
National Diagnostic Imaging Trials Project
(lung and prostate cancers)
Elias A. Zerhouni, Principal Investigator (15%)

NIH/National Cancer Institute—UO1-CA49076
6/89-6/93—\$960,000 (direct costs)
National Diagnostic Imaging Trials Project
(colorectal and pancreatic cancers)
Elias A. Zerhouni, Principal Investigator (15%)

CT Densitometry of Pulmonary Nodules
Funded by Grants from General Electric Co. and CIRS, Inc.
1982-1985—\$250,000

Paul Lauterbur Award—\$10,000, 1989

NIH/SIG—1S10 R007182-01
1.5T Echo Planar Gradient Probe
4/1/93-3/31/94—\$400,000 total costs
Elias A. Zerhouni, Principal Investigator

NIH/NHLBI 2PO1HL10342-31
Integrated Regulation of Pulmonary Vessels and Airways
6/1/93-5/31/97—\$579,684
Wayne Mitzner, Ph.D., Principal Investigator
Elias A. Zerhouni, Co-Investigator (5%)

Whitaker Foundation
High Resolution Imaging and Spectroscopy of Atherosclerotic Plaques Using Intravascular MRI
4/1/95-3/3/1/97—\$49,952
Ergin Atalar, Ph.D., Principal Investigator
Elias Zerhouni, Co -Investigator (3%)

PATENTS ISSUED:

Zerhouni EA.
Reference Phantom for CT Densitometry
U.S. Patent 4,646,334—1985

Zerhouni EA and Parish DN.
Tissue Tagging of the Human Heart by MRI
U.S. Patent 4,953,554—1990

Zerhouni EA, Burbank R
Method and Apparatus for Percutaneous Pan-Extraction of Breast Lesions
U.S. Patent 5,526,822 —1996

Atalar E, Bottomley PA, and Zerhouni EA.
Method of Internal Magnetic Resonance Imaging and Spectroscopic Analysis and
Associated Apparatus
U.S. Patent 5,699,801—1997

Burbank FH, Fogarty TJ, Manska WE, Ritchart MA, Ryan TJ, Zerhouni EA
Apparatus for Automated Biopsy and Collection of Soft Tissue
U.S. Patent 5,775,333—1998

BIBLIOGRAPHY

Original Peer-Reviewed Publications:

1. Zerhouni EA, Barth KH, Siegelman SS. Computed tomographic demonstration of inferior vena cava invasion in a case of hepatocellular carcinoma. *JCAT* 1978; 2:363-365.
2. Barnett PH, Zerhouni EA, White RI Jr, Siegelman SS. Computed tomography in the diagnosis of cavernous hemangioma of the liver. *AJR* 1980; 134(3):439-447.
3. Zerhouni EA, Barth KH, Siegelman SS. Demonstration of venous thrombosis by computed tomography. *AJR* 1980; 134(4):753-758.
4. Zerhouni EA, Siegelman SS, Walsh PC, White RI. Elevated pressure in the left renal vein in patients with varicocele: preliminary observations. *J Urol* 1980; 123(4):512-513.
5. Siegelman SS, Copeland BE, Saba GP, Cameron JL, Sanders RC, Zerhouni EA. CT of fluid collections associated with pancreatitis. *AJR* 1980; 134(6):1121-1132.
6. Siegelman SS, Zerhouni EA, Leo FP, Khouri NF. CT of the solitary pulmonary nodule. *AJR* 1980; 135(1):1-13.
7. Grumbine FC, Rosenshein NB, Zerhouni EA, Siegelman SS. Abdominopelvic computed tomography in the preoperative evaluation of early cervical cancer. *Gynecol Oncol* 1981; 12(3):286-290.
8. Zerhouni EA, Scott WW, Baker RR, Wharam MD, Siegelman SS. Invasive thymomas: diagnosis and evaluation by computed tomography. *JCAT* 1982; 6(1):92-100.
9. Zerhouni EA, Spivey J, Morgan RH, Leo F, Stitik FP, Siegelman SS. Factors influencing quantitative CT measurements of solitary pulmonary nodules. *JCAT* 1982; 6:1075-1087.
10. Zerhouni EA, Boukadoum M, Siddiqy MA, Newbold JM, Stone DC, Shirey MP, Spivey JF, Hesselman CW, Leo FP. A standard phantom for quantitative CT analysis of pulmonary nodules. *Radiology* 1983; 149(3):767-773.
11. Boukadoum M, Siddiqy MA, Zerhouni EA, Stitik FP. CT demonstration of adenomyomatosis of the gallbladder. *JCAT* 1984; 8(1):177.
12. Zerhouni EA, Schellhammer P, Schaefer JC, Drucker JR, Jaffe AH, Gonzales JE, Edwards OE, Lampton LD. Management of bleeding renal angiomyolipomas by transcatheter embolization following CT diagnosis. *Urol Radiol* 1984; 6(3-4):205-209.
13. Megibow AJ, Zerhouni EA, Hulnick DH, Beranbaum ER, Balthazar EJ. Air insufflation of the colon as an adjunct to CT of the pelvis. *JCAT* 1984; 8(4):787-800.
14. Scatarige JC, Fishman EK, Zerhouni EA, Siegelman SS. Transdiaphragmatic extension of invasive thymoma. *AJR* 1985; 144(1):31-35.
15. Zerhouni EA, Naidich DP, Khouri NF, Stitik FP, Siegelman SS. Computed tomography of the pulmonary parenchyma. Part 2: Interstitial disease. *J Thoracic Imaging* 1985; 1(1):54-64.
16. Naidich DP, Zerhouni EA, Hutchins GM, Genieser MB. Computed tomography of the pulmonary parenchyma. Part I: distal air-space disease. *J Thoracic Imaging* 1985; 1(1):39-53.
17. Zerhouni EA, Stitik FP, Siegelman SS, Naidich DPSagel SS, Proto AV, Muham JR, Walsh JW, Martinez CR, Heelan RT, et al. Computed tomography of the pulmonary nodule: a cooperative study. *Radiology* 1986; 160(2):319-327.
18. Siegelman SS, Khouri NF, Leo FP, Fishman EK, Braverman RM, Zerhouni EA. Solitary pulmonary nodules: CT assessment. *Radiology* 1986; 160:307-312.
19. Siegelman SS, Khouri NF, Scott WW Jr., Leo FP, Hamper UM, Fishman EK, Zerhouni EA. Pulmonary hamartoma: CT findings. *Radiology* 1986; 160(2):313-317.

20. McDonnell CH, Fishman EK, Zerhouni EA. CT demonstration of calcified liver metastases in medullary thyroid carcinoma. *JCAT* 1986; 10(6):976-978.
21. Zerhouni EA, Donner DW, Bosma J. Relationship of cervical spine disorders to dysphagia. *Dysphagia* 1986; 1:1-16.
22. Ashida C, Zerhouni EA, Fishman EK. CT demonstration of prominent right hilar soft tissue collections. *JCAT* 1987; 11(1):57-59.
23. Fishman EK, Deutch BM, Hartman DS, Goldman SM, Zerhouni EA, Siegelman SS. Primary adrenocortical carcinoma: CT evaluation with clinical correlation. *AJR* 1987; 148(3):531-535.
24. Khouri NF, Meziane MA, Zerhouni EA, Fishman EK, Siegelman SS. The solitary pulmonary nodule: assessment, diagnosis, and management. *Chest* 1987; 91:128-133.
25. Pakter RL, Fishman EK, Nussbaum A, Giarsiana FA, Zerhouni EA. CT findings in splenic hemangiomas in the Klippel-Trenaunay-Weber syndrome. *JCAT* 1987; 11(1):88-91.
26. Kuhlman JE, Scatarige JC, Fishman EK, Zerhouni EA, Siegelman SS. CT demonstration of high attenuation pleural-parenchymal lesions due to amiodarone therapy. *JCAT* 1987; 11(1):160-162.
27. Ashida C, Fishman EK, Zerhouni EA, Herlong FA, Siegelman SS. Computed tomography of hepatic cavernous hemangioma. *JCAT* 1987; 11(3):455-460.
28. Hruban RH, Meziane MA, Zerhouni EA, Wheeler PS, Dumler JS, Hutchins GM. Radiologic-pathologic correlation of the CT halo sign in invasive pulmonary aspergillosis. *JCAT* 1987; 11(3):534-536.
29. Pakter RL, Fishman EK, Zerhouni EA. Calf hematoma—computed tomographic and magnetic resonance findings. *Skeletal Radiol* 1987; 16(5):393-396.
30. Hruban RH, Meziane MA, Zerhouni EA, Wheeler PS, Dumler JS, Hutchins GM. High resolution computed tomography of inflation-fixed lungs: pathologic-radiologic correlation of centrilobular emphysema. *Am Rev Resp Dis* 1987; 136(4):935-940.
31. Hruban RH, Zerhouni EA, Dagher AP, Pessar ML, Hutchins GM. Morphologic basis of MR imaging of benign prostate hyperplasia. *JCAT* 1987; 11(6):1035-1041.
32. Milne EN, Zerhouni EA. Blood supply of pulmonary metastases. *J Thoracic Imaging* 1987; 2(4):15-23.
33. Soulen RL, Fishman EK, Pyeritz RE, Zerhouni EA, Pessar ML. Marfan syndrome: evaluation with MR imaging vs CT. *Radiology* 1987; 165(3):697-701.
34. Kuhlman JE, Fishman EK, Burch PA, Karp JE, Zerhouni EA, Siegelman SS. Invasive pulmonary aspergillosis in acute leukemia: the contribution of CT to early diagnosis and aggressive management. *Chest* 1987; 92(1):95-99.
35. Fishman EK, Drebin B, Magid D, Scott WW, Ney DR, Brooker AF, Riley LH, St-Ville JA, Zerhouni EA, Siegelman SS. Volumetric rendering techniques: applications for three-dimensional imaging of the hip. *Radiology* 1987; 163(3):737-738.
36. Kuhlman JE, Fishman EK, Wang KP, Zerhouni EA, Siegelman SS. Mediastinal cysts: diagnosis by CT and needle aspiration. *AJR* 1988; 150(1):75-78.
37. Meziane MA, Hruban RH, Zerhouni EA, Wheeler PS, Khouri NF, Fishman EK, Hutchins GM, Siegelman SS. High resolution CT of lung parenchyma with pathologic correlation. *Radiographics* 1988; 8(1):27-54.
38. Kuhlman J, Fishman EK, Kuhajda FP, Meziane MM, Khouri NF, Zerhouni EA, Siegelman SS. Solitary bronchioloalveolar carcinoma: CT criteria. *Radiology* 1988; 167(2):379-382.
39. Zerhouni EA, Parish DM, Rogers WJ, Yang A, Shapiro EP. Human heart: tagging with MR imaging: a method for noninvasive assessment of myocardial motion. *Radiology* 1988; 169(1):59-63.

40. Merine DS, Fishman EK, Zerhouni EA. Computed tomography and magnetic resonance imaging diagnosis of thymic cyst. *JCAT* 1988; 12(3):220-222.
41. Ren H, Hruban RH, Kuhlman JE, Fishman EK, Wheeler PS, Zerhouni EA, Hutchins GM. Computed tomography of rounded atelectasis. *JCAT* 1988; 12(6):1031-1034.
42. Merine DS, Fishman EK, Sitzmann JV, Kuhlman JE, Order S, Pessar M, Zerhouni EA. Vascular abnormalities following radio- and chemotherapy of hepatic neoplasms: CT angiographic findings. *JCAT* 1988; 18(3):229-31.
43. Pessar ML, Soulent RL, Kan JS, Kadir S, Zerhouni EA. MRI demonstration of pulmonary sequestration. *Ped Radiol* 1988; 18(3):229-31.
44. Merine DS, Fishman EK, Zerhouni EA. Spontaneous hepatic hemorrhage: clinical and CT findings. *JCAT* 1988; 12(3):397-400.
45. Kuhlman JE, Fishman EK, Burch PA, Karp JE, Zerhouni EA, Siegelman SS. CT of invasive pulmonary aspergillosis. *AJR* 1988; 150(5):1015-1020.
46. Rogers WJ, Buchalter MB, Weiss JL, Zerhouni EA, Parish DM, Weisfeldt ML, Shapiro EP. Selective MNR tracking of a slice of human heart through the cardiac cycle. *Circulation* 1988; 78:591.
47. Lima JAC, Weiss JL, Bouton S, Zerhouni EA, Jeremy R, Meils C, Guier WH, Graves W, Levin H, Shapiro EP. Endo vs epicardial shortening by MRI tissue tagging: Correlation with systolic thickening during ischemia. *Circulation* 1989;80(4):152.
48. Shapiro EP, Rogers WJ, Beyar R, Soulent RL, Zerhouni EA, Lima JA, Weiss JL. Determination of left ventricular mass by magnetic resonance imaging in hearts deformed by acute infarction. *Circulation* 1989;79:706-711.
49. Magid D, Siegelman SS, Eggleston JC, Fishman EK, Zerhouni EA. Pulmonary carcinoid tumors: CT assessment. *JCAT* 1989; 13(2):244-47.
50. Caskey CI, Zerhouni EA, Fishman EK, Rahmouni AD. Aging of the diaphragm: a CT study. *Radiology* 1989; 171(2):385-389.
51. Ren H, Hruban RH, Kuhlman JE, Fishman EK, Wheeler PS, Zerhouni EA, Hutchins GM. Computed tomography of inflation-fixed lungs: the beaded septum sign of pulmonary metastases. *JCAT* 1989; 13(3):411-416.
52. Soulent MC, Zerhouni EA, Fishman EK, Gayler BW, Milligan F, Siegelman SS. Enlargement of the pancreatic head in patients with pancreas divisum. *Clin Imaging* 1989; 13(1):51-57.
53. Schlaff WD, Zerhouni EA, Huth JA, Chen J, Damewood MD, Rock JA. A placebo-controlled trial of a depot gonadotropin-releasing hormone analogue (leuprolide) in the treatment of uterine leiomyomata. *Obstet Gynecol* 1989; 74(6):856-862.
54. McVeigh ER, Yang A, Zerhouni EA. Rapid measurement of T1 using spatially selective pre-inversion pulses. *Medical Physics* 1990; 17(1):131-134.
55. Sitzmann JV, Coleman J, Pitt HA, Zerhouni E, Fishman E, Kaufman SL, Order S, Grochow LB, Cameron JL. Preoperative assessment of malignant hepatic tumors. *Am J Surg* 1990; 159:137-143.
56. Beyar R, Shapiro EP, Graves WH, Rogers WJ, Guier WH, Carey GA, Soulent RL, Zerhouni EA, Weisfeldt ML, Weiss JL. Quantification and validation of left ventricular thickening by a three dimensional MRI approach. *Circulation* 1990; 81(1):297-307.
57. Rogers WJ, Shapiro EP, Weiss S, Parish DM, Zerhouni EA. Detection and correction of left ventricular systolic long axis motion by MRI. *Circulation* 1991;84(2):721-731.

58. Buchalter MB, Weiss JL, Rogers WJ, Zerhouni EA, et al. Noninvasive quantification of left ventricular rotational deformation in normal humans using magnetic resonance imaging myocardial tagging. *Circulation* 1990; 81(4):1236-1244.
59. Rifkin MD, Zerhouni EA, Gatsonis CA, Quint LE, Paushter DM, Epstein JE, Hamper U, Hricak H, Walsh PC, McNeil BJ. Comparison of MRI and US in staging early prostate cancer: Results of a multi-institutional cooperative trial. *New Eng J Med* 1990;323(10):621-626.
60. Herold CJ, Kuhlman JE, Zerhouni EA. Pulmonary atelectasis: Signal patterns with MR imaging. *Radiology* 1991;178(3):715-720.
61. Ricci C, Cova M, Kang YS, Yang A, Rahmouni A, Scott WW Jr., Zerhouni EA. Normal age-related patterns of cellular and fatty bone marrow distribution in the axial skeleton. *Radiology* 1990; 177(1): 83-88.
62. Bolster BD Jr, McVeigh ER, Zerhouni EA. Myocardial tagging in polar coordinates with use of striped tags. *Radiology* 1990;177(3):769-772.
63. Ricci C, Cova M, Kang YS, Yang A, Rahmouni A, Scott WW Jr., Zerhouni EA. Normal age-related patterns of cellular and fatty bone marrow distribution in the axial skelton: MR imaging study. *Radiology* 1990;177(1):83-88.
64. Carter HB, Brem RF, Tempany CM, Yang A, Epstein JI, Walsh PC, Zerhouni EA. Nonpalpable prostate cancer: detection with MR imaging. *Radiology* 1991;178(2):523-525.
65. Bouton S, Yang A, McCrindle BW, Kidd L, McVeigh ER, Zerhouni EA. Case Report: Differentiation of Tumor from Viable Myocardium using Cardiac Tagging with MR Imaging. *JCAT* 1991;15(4):676-678.
66. Wolff KA, Herold CJ, Tempany CM, Parravano JG, Zerhouni EA. Aortic dissection: atypical patterns seen at MRI. *Radiology* 1991; 181:489-495.
67. Herold CJ, Brown RH, Mitzner W, Links JM, Hirshman CA, Zerhouni EA. Assessment of Pulmonary Airway Reactivity with High-Resolution CT. *Radiology* 1991; 181:369-374.
68. Kawashima AK, Kuhlman JE, Fishman EK, Tempany CM, Magid D, Lederman HM, Winkelstein JA, Zerhouni EA. Pulmonary *Aspergillus* chest wall involvement in chronic granulomatous disease: CT and MRI findings. *Skeletal Radiol* 1991;20:487-493
69. Kawashima A; Fishman EK, Hruban RH, Tempany CM, Kuhlman JE; Zerhouni EA. Biliary Cystadenoma with intratumoral bleeding: radiologic-pathologic correlation. *JCAT* 1991;15(6):1035-1038
70. Tempany CM, Rahmouni AD, Epstein JL, Walsh PC, Zerhouni EA. Invasion of the neurovascular bundle by prostate cancer: evaluation with MRI imaging. *Radiology* 1991; 181(1):107-112.
71. McVeigh ER, Zerhouni EA. Noninvasive measurement of transmural gradients in myocardial strain with MR imaging. *Radiology* 1991;180(3):677-683.
72. Rogers WJ Jr., Shapiro EP, Weiss JL, Buchalter MB, Rademakers FE, Weisfeldt ML, Zerhouni EA. Quantification of and correction for left ventricular systolic long-axis shortening by magnetic resonance tissue tagging and slice isolation. *Circulation* 1991;84(2):721-731.
73. Brown RH, Herold CJ, Hirshman CA, Zerhouni EA, Mitzner W. In vivo measurements of airways reactivity using high-resolution computed tomography. *Am Rev Resp Dis* 1991;144(1):208-212.

74. Bouton S, Yang A, McCrindle BW, Kidd L., McVeigh ER, Zerhouni EA. Differentiation of tumor from viable myocardium using cardiac tagging with MR imaging. *JCAT* 1991;15(4): 676-8.
75. Cova M, Kang YS, Tsukamoto H, Jones LC, McVeigh E, Neff BL, Herold CJ, Scott WW Jr, Hungerford DS, Zerhouni EA. Bone marrow perfusion evaluated with gadolinium-enhanced dynamic fast MR imaging in a dog model. *Radiology* 1991;179(2):535-539.
76. Yang A, Mostwin JL, Rosenshein NB, Zerhouni EA. Pelvic floor descent in women: dynamic evaluation with fast MR imaging and cinematic display. *Radiology* 1991;179(1):25-33.
77. Webb WR, Gatsonis C, Zerhouni EA, Heelan RT, Glazer GM, Francis IR, McNeil BJ. CT and MR imaging in staging non-small cell bronchogenic carcinoma: report of the Radiologic Diagnostic Oncology Group. *Radiology* 1991;178(3):705-713.
78. Herold CJ, Wetzel RC, Robotham JL, Herold SM, Zerhouni EA, Acute effects of increased intravascular volume and hypoxia on the pulmonary circulation; assessment with high-resolution CT. *Radiology* 1992; 183(3):655-662.
79. Rademakers FE, Buchalter MB, Rogers WJ, Zerhouni EA, Weisfeldt ML, Weiss JL, Shapiro EP, Dissociation between left ventricular untwisting and filling. Accentuation by catecholamines. *Circulation* 1992; 85(4):1572-1581.
80. Schiebler ML, Yankaskas BC, Tempany C, Spritzer CE, Rifkin MD, Pollack HM, Holtz P, Zerhouni EA, MR imaging in adenocarcinoma of the prostate: interobserver variation and efficacy for determining stage C disease. *AJR* 1992;158(3):559-562.
81. Brem RF, Tempany CM, Zerhouni EA, MR detection of breast implant rupture. *JCAT* 1992;16(1):157-159.
82. Moore C, O'Dell W, McVeigh ER, Zerhouni EA. Calculation of 3-D left ventricular strains from biplanar tagged MR images. *JMRI* 1992; 2:165-175.
83. Tsukamoto H, Kang YS, Jones LC, Cova M, Herold CJ, McVeigh E, Hungerford DS, Zerhouni EA. Evaluation of Marrow Perfusion in the Femoral Head by Dynamic Magnetic Resonance Imaging: Effect of Venous Occlusion in a Dog Model. *Investigative Radiology* 1992; 27(4):275-281.
84. Wetzel RC, Herold CJ, Zerhouni EA, Robotham JL. Hypoxic bronchodilation. *J Appl Physiol* 1992;73(3):1202-6.
85. Wetzel RC, Herold CJ, Zerhouni EA, Robotham JL. Intravascular volume loading reversibly decreases airway cross-sectional area. *Chest* 1993;103(3):865-70.
86. Imanishi Y, Hou VY, Chako AC, Herold CJ, Tempany CMC, Mitsuhashi H, Masuoka M, Fujikawa M, Zerhouni EA. Pseudothrombus in the inferior vena cava near the renal vein on gradient echo image (GRASS). *Jpn J Med Imaging* 1993;12:2163-169.
87. Azhari H, Weiss JL, Rogers WJ, Siu CO, Zerhouni EA, Shapiro EP. Noninvasive quantification of principal strains in normal canine hearts using tagged MRI images in 3-D. *Am J Physiol* 1993;264(1 Pt 2):H205-16.
88. Kuhlman JE, Reyes BL, Hruban RH, Askin FB, Zerhouni EA, Fishman EK, Siegelman SS. Abnormal air-filled spaces in the lung. *Radiographics* 1993;13(1):47-75.
89. Tempany CM, Partin AW, Zerhouni EA, Zinreich SJ, Walsh PC. The influence of finasteride on the volume of the peripheral and periurethral zones of the prostate in men with benign prostatic hyperplasia. *Prostate* 1993;22(1):39-42.
90. Gearhart JP, Yang A, Leonard MP, Jeffs RD, Zerhouni EA. Prostate size and configuration in adults with bladder exstrophy. *J Urol* 1993;149(2):308-10.

91. Rahmouni A, Tempany C, Jones R, Mann R, Yang A, Zerhouni E. Lymphoma: Monitoring tumor size and signal intensity with MR imaging. *Radiology* 1993;188:445-451.
92. Atalay MK, Forder JR, Chacko VP, Kawamoto S, Zerhouni EA. Oxygenation in the rabbit myocardium: assessment with susceptibility-dependent MR imaging. *Radiology* 1993;189:759-764.
93. Zerhouni EA, Herold CJ, Brown RH, Wetzel RC, Hirshman CA, Robotham JL, Mitzner W. High-resolution computed tomography—physiologic correlation. *J Thoracic Imaging* 1993;8(4):265-272.
94. Lima JAC, Jeremy R, Guier W, Bouton S, Zerhouni EA, McVeigh ER, et al. Accurate systolic wall thickening by MRI with tissue tagging: correlation with sonomicrometers in normal and ischemic myocardium. *J Am Coll Cardiol* 1993;21:7:1741-51.
95. Perry L, Lima J, Herskowitz A, McVeigh E, MacGowan G, Zerhouni E, Bernac S, Rogers W, Shapiro E, Weiss J. Noninfarcted adjacent region dysfunction detected by 3D tagged MRI thickening persists long after myocardial infarction. *Circulation* 1993;88(4)II:I-82.
96. Berg WA, Caskey CI, Hamper UM, Anderson ND, Chang BW, Sheth S, Zerhouni EA, Kuhlman JE. Diagnosing Breast Implant Rupture with Magnetic Resonance Imaging, Ultrasound, and Mammography. *RadioGraphics* 1993;13:1323-1326.
97. Webb WR, Zerhouni EA, et al. Interobserver Variability in the CT and MRI Staging of Lung Cancer: Report of the Radiological Diagnostic Oncology Group. *J Comput Assist Tomogr* 1993;17(6):841-6.
98. Brown RH, Herold CJ, Hirshman CA, Zerhouni EA, Mitzner W. Individual airway constrictor response heterogeneity to histamine assessed by high resolution computed tomography. *J Appl Physiol* 1993;74(6):2615-20.
99. Brown RH, Mitzner W, Zerhouni E, Hirshman CA. Direct in vivo visualization of bronchodilation induced by inhalational anesthesia using high resolution computed tomography (HRCT). *Anesthesiology* 1993;78(2):295-300.
100. Brown RH, Zerhouni EA, Hirshman CA. Comparison of low concentrations of halothane and isoflurane as bronchodilators. *Anesthesiology* 1993;78(6):1097-1101.
101. Hardy CJ, Bolster BD, McVeigh ER, Adams WJ, Zerhouni EA. A one-dimensional velocity technique for NMR measurement of aortic distensibility. *Magnetic Resonance in Medicine* 1994;31:513-520.
102. Berg WA, Anderson ND, Zerhouni EA, Chang BW, Kuhlman JE. MR imaging of the breast in patients with silicone breast implants: normal postoperative variants and diagnostic pitfalls. *AJR* 1994;163:575-578.
103. Bazille A, Guttman MA, McVeigh ER, Zerhouni EA. Impact of semi-automated versus manual image segmentation errors on myocardial strain calculation by MR tagging. *Investigative Radiology* 1994;29(4):427-433.

104. Brown RH, Herold C, Mitzner W, Zerhouni E. Spontaneous airways constriction during breath holding studied by high-resolution computed tomography. *Chest* 1994;106:920-924.
105. Brown RH, Zerhouni E, Hirshman C. Reversal of bronchoconstriction by inhaled nitric oxide: histamine versus methacholine. *Am J Respir and Crit Care Med* 1994;150:233-237.
106. Guttman MA, Prince JL, McVeigh ER. Tag and contour detection in tagged MR images of the left ventricle. *IEEE Trans Biomed Eng* 1994;13(1):74-88.
107. Nguyen BD, Georges NP, Hamper UM, Zerhouni EA. Primary cervicovaginal endometriosis: Sonographic findings with MR imaging correlation. *J Ultrasound Med* 1994;13:809-811.
108. Imanishi Y, Hou VY, Chako AC, Tempany CMC, Herold CJ, Zerhouni EA. Evaluation of the pancreas by MRI. *Eur Radiol* 1994;4:243-253.
109. Tempany CMC, Zhou X, Zerhouni EA, Rifkin MD, Quint LE, Piccoli CW, Ellis JH, McNeil BJ. Staging of prostate cancer: results of Radiology Diagnostic Oncology Group project comparison of three MR imaging techniques. *Radiology* 1994;192:47-54.
110. Berg WA, Anderson ND, Zerhouni EA, Chang BW, Kuhlman JE. MR imaging of the breast in patients with silicone breast implants: normal postoperative variants and diagnostic pitfalls. *AJR* 1994;163(3):575-8.
111. Kuhlman JE, Bouchardy L, Fishman EK, Zerhouni EA. CT and MR imaging evaluation of chest wall disorders. [Review] *Radiographics* 1994;14(3):571-95.
112. Wood SA, Zerhouni EA, Hoford JD, Hoffman EA, Mitzner W. Measurement of three-dimensional lung tree structures by using computed tomography. *J Appl Physiol* 1995;79(5):1687-97.
113. Brown RH, Zerhouni EA, Mitzner W. Airway edema potentiates airway reactivity. *J Appl Physiol* 1995;79(4):1242-8.
114. Chako AC, Tempany CM, Zerhouni EA. Effect of slice acquisition direction on image quality in thoracic MRI. *J Comput Assist Tomogr* 1995;19(6):936-40.
115. Atalay MK, Reeder SB, Zerhouni EA, Forder JR. Blood oxygenation dependence of T1 and T2 in the isolated, perfused rabbit heart at 4.7T. *Magn Reson Med* 1995;34(4):623-7.
116. Bluemke DA, Petri M, Zerhouni EA. Femoral head perfusion and composition: MR imaging and spectroscopic evaluation of patients with systemic lupus erythematosus and at risk for avascular necrosis. *Radiology* 1995;197(2):433-8.

117. Croisille P, Souto M, Cova M, Wood S, Afework Y, Kuhlman JE, Zerhouni EA. Pulmonary nodules: improved detection with vascular segmentation and extraction with spiral CT. Work in progress. *Radiology* 1995;197(2):397-401.
118. Berg WA, Caskey CI, Hamper UM, Kuhlman JE, Anderson ND, Chang BW, Sheth S, Zerhouni EA. Single- and double- lumen silicone breast implant integrity: prospective evaluation of MR and US criteria. *Radiology* 1995;197(1):45-52.
119. Tang C, McVeigh ER, Zerhouni EA. Multi-shot EPI for improvement of myocardial tag contrast: comparison with segmented SPGR. *Magn Reson Med* 1995;33(3):443-7.
120. O'Dell WG, Moore CC, Hunter WC, Zerhouni EA, McVeigh ER. Three-dimensional myocardial deformations: calculation with displacement field fitting to tagged MR images. *Radiology* 1995;195(3):829-35.
121. Wood SA, Hoford JD, Hoffman EA, Zerhouni E, Mitzner W. A method for measurement of cross sectional area, segment length, and branching angle of airway tree structures in situ. *Comput Med Imaging Graph* 1995;19(1):145-52.
122. Megibow AJ, Zhou XH, Rotterdam H, Francis IR, Zerhouni EA, Balfe DM, Weinreb JC, Aisen A, Kuhlman J, Heiken JP, et al. Pancreatic adenocarcinoma: CT versus MR imaging in the evaluation of resectability--report of the Radiology Diagnostic Oncology Group. *Radiology* 1995;195(2):327-32.
123. Brown RH, Zerhouni EA, Mitzner W. Variability in the size of individual airways over the course of one year. *Am J Respir Crit Care Med* 1995;151(4):1159-64.
124. Brown RH, Zerhouni EA, Mitzner W. Visualization of airway obstruction in vivo during pulmonary vascular engorgement and edema. *Am J Physiol* 1995; 1070-1078.
125. Correa J, Souto M, Tahoces PG, Malagari KS, Tucker DM, Larkin JJ, Kuhlman J, Barnes GT, Zerhouni EA, Fraser RG, Vidal JJ. Digital chest radiography: comparison of unprocessed and processed images in the detection of solitary pulmonary nodules. *Radiology* 1995;195:253-258.
126. Constantinides CD, O'Dell WG, Westgate CR, Zerhouni EA, McVeigh ER. A Phased Array coil for cardiac imaging. *Magn Reson Med* 1995;34(1):92-8.
127. Judd RM, Reeder SB, Atalar E, McVeigh ER, Zerhouni EA: A magnetization-driven gradient echo pulse sequence for the study of myocardial perfusion. *Mag Res Med* 1995;34(2):276-82.
128. Lima JAC, Judd RM, Bazille A, Schulman SP, Atalar E, Zerhouni EA: Regional heterogeneity of myocardial perfusion within human infarcts demonstrated by contrast enhanced ultrafast MRI. *Circulation* 1995;92(5): 1117-25.

129. Judd RM, Atalay MK, Rottman JR, Zerhouni EA: Effects of myocardial water exchange on T1 enhancement during bolus administration of MR contrast agents. *Mag Res Med* 1995;33(2):215-23.
130. Hardy CJ, Bolster BD Jr, McVeigh ER ,Iben IE, Zerhouni EA. Pencil excitation with interleaved fourier velocity encoding: NMR measurement of aortic distensibility. *Magn Reson Med* 1996;35(6):814-9.
131. Ibarburen C ,Haberman JJ, Zerhouni EA. Peripheral primitive neuroectodermal tumors. CT and MRI evaluation. *Eur J Radiol* 1996 Feb;21(3):225-32.
132. Zerhouni EA, Rutter C, Hamilton SR, Balfe DM, Megibow AJ, Francis IR, Moss AA, Heiken JP, Tempany CM, Aisen AM, Weinreb JC, Gatsonis C, McNeil BJ. CT and MR imaging in the staging of colorectal carcinoma: report of the Radiology Diagnostic Oncology Group II. *Radiology* 1996;200(2):443-51.
133. Austin JH, Muller NL, Friedman PJ, Hansell DM, Naidich DP, Remy-Jardin M, Webb WR, Zerhouni EA. Glossary of terms for CT of the lungs: recommendations of the Nomenclature Committee of the Fleischner Society. *Radiology* 1996;200(2):327-31.
134. Nguyen BD, Westra WH, Zerhouni EA. Renal cell carcinoma and tumor thrombus neovascularity: MR demonstration with pathologic correlation. *Abdom Imaging* 1996;21(3):269-71.
135. Reeder SB, Atalay MK, McVeigh ER, Zerhouni EA, Forder JR. Quantitative cardiac perfusion: a noninvasive spin-labeling method that exploits coronary vessel geometry. *Radiology* 1996;200(1):177-84.
136. Lugo-Olivieri CH, Scott WW Jr, Zerhouni EA. Fluid-fluid levels in injured knees: do they always represent lipohemarthrosis? *Radiology* 1996;198(2):499-502.
137. Atalar E, Bottomley PA, Ocali O, Correia LC, Kelemen MD, Lima JA, Zerhouni EA. High resolution intravascular MRI and MRS by using a catheter receiver coil. *Magn Reson Med* 1996;36(4):596-605.
138. Kawamoto S, Bluemke DA, Traill TA, Zerhouni EA. Thoracoabdominal aorta in Marfan syndrome: MR imaging findings of progression of vasculopathy after surgical repair. *Radiology* 1997;203(3):727-32.
139. Bluemke DA, Wolf RL, Tani I, Tachiki S, McVeigh ER, Zerhouni EA. Extremity veins: evaluation with fast-spin-echo MR venography. *Radiology* 1997;204(2):562-5.
140. Waldman BJ, Zerhouni EA, Frassica FJ. Recurrence of giant cell tumor of bone: the role of MRI in diagnosis. *Orthopedics* 1997;20(1):67-9.
141. Kim RJ, Lima JA, Chen EL, Reeder SB, Klocke FJ, Zerhouni EA, Judd RM. Fast 23 Na magnetic resonance imaging of acute reperfused myocardial infarction. Potential to assess myocardial viability. *Circulation* 1997;95(7):1877-85.

142. Ma LD, Frassica FJ, McCarthy EF, Bluemke DA, Zerhouni EA. Benign and malignant musculoskeletal masses: MR imaging differentiation with rim-to-center differential enhancement ratios. *Radiology* 1997;202(3):739-44.
143. Correia LC, Atalar E, Kelemen MD, Ocali O, Hutchins GM, Fleg JL, Gerstenblith G, Zerhouni EA, Lima JA. Intravascular magnetic resonance imaging of aortic atherosclerotic plaque composition. *Arterioscler Thromb Vasc* 1997;17(12):3626:32.
144. Wu, KC, Zerhouni EA, Judd RM, Lugo-Olivieri CH, Barouch LA, Schulman SP, Bluementhal RS, Lima JA. Prognostic significance of microvascular obstruction by magnetic resonance imaging in patients with acute myocardial infarction. *Circulation* 1998;97(8):765-72.
145. Wu, KC, Kim, RJ, Bluemke, DA, Rochitte, CE, Zerhouni, EA, Becker, LC, Lima, JA. Quantification and time course of microvascular obstruction by contrast enhanced echocardiography and magnetic resonance imaging following acute myocardial infarction and reperfusion. *J Am Coll Cardiol* 1988; Nov 15;32(6):1756-64.
146. Zerhouni, EA, Plewes D, Vosburgh KG. National Cancer Institute partnerships with Academia and Industry in Cancer Diagnosis and Treatment: Report of the workshop. *Acad Radiol* 1998;5(2):133-40.
147. Croisille P, Guttman MA, Atalar E, McVeigh ER, Zerhouni EA. Precision of myocardial contour estimation from tagged MR images with a “black-blood” technique. *Acad Radiol* 1998;5(2):93-100.
148. Croisille P, Moore CC, Judd RM, Lima JA, Arai M, McVeigh ER, Becker LC, Zerhouni EA. Differentiation of viable and nonviable myocardium by the use of three-dimensional tagged MRI in 2-day-old reperfused, canine infarcts. *Circulation* 1999;99 (2):284-291.
149. Moore CC, McVeigh ER, Zerhouni EA. Non-invasive measurement of three-dimensional myocardial deformation with tagged magnetic resonance imaging during graded local ischemia. *J Cardiovas MR* 1999;1 (3):207-222.
150. Yang X, Atalar E, Zerhouni EA. Intravascular MR imaging and intravascular MR-guided interventions. *Int J Cardiovasc Interventions* 1999;2:85-96.
151. Tortolani PJ, McCarthy EF, Lietman SA, Bluemke DA, Zerhouni EA, Frassica FJ. Soft-tissue tumors: Distinguishing the benign from the malignant. *J Musculoskel Med* 1999;16:469-476.
152. Artemov, D, Revelon, G, Atlar, E, Bluemke, DA, Bhujawalla, ZM, Zerhouni, EA. Switchable multicoil array for MR micro-imaging of breast lesions. *Magn Reson Med*; 1999, Mar 41(3):569-74.

153. Moore CC, Lugo-Olivieri CH, McVeigh ER, Zerhouni EA. Characterization of Three Dimensional Systolic Strain Patterns in the Normal Human Left Ventricle with Tagged MRI. *Radiology* 2000; 214(2):453-66.
154. Kraitchman DL, Hillenbrand HB, Ozanur I, Lima JA, McVeigh ER, Zerhouni EA, Bluemke DA. Noninvasive assessment of myocardial stunning from short-term coronary occlusion using tagged magnetic resonance imaging. *J Cardiovas MR* 2000;2(2):123-36.
155. Moore CC, McVeigh ER, Zerhouni EA. Quantitative tagged magnetic resonance imaging of the normal human left ventricle. *Top Magn Reson Imaging* 2000, Dec;11(6):359-71. Review.
156. Garot J, Bluemke DA, Osman NF, Rochitte CE, Zerhouni EA, Prince JL, Lima JA. Transmural contractile reserve after reperfused myocardial infarction in dogs. *J Am Coll Cardiol* 2000, Dec;36(7):2339-46.
157. Garot J, Bluemke DA, Osman NF, Rochitte CE, McVeigh ER, Zerhouni EA, Prince JL, Lima JA. Fast determination of regional myocardial strain fields from tagged cardiac images using harmonic phase MRI. *Circulation* 2000, Mar 7;101(9):981-8.

Chapters in Books

1. Zerhouni EA, Sanders RC. Contribution of uroradiology to the diagnosis and management of kidney disease. In *Current Nephrology*. Boston: Houghton-Mifflin, 1980; 436-448.
2. Siegelman SS, Zerhouni EA, Littleton JT, Durizch ML. Computed tomography of the solitary pulmonary nodule. In *Sectional Imaging Methods: A Comparison*. Baltimore: University Park Press, 1983; 175-182.
3. Siegelman SS, Zerhouni EA, Nickoloff EL, Khouri NF, Stitik FP. CT of the solitary pulmonary nodule. In: Donner MW, Heuck FHW, eds. *Radiology Today*. Berlin: Springer, 1985.
4. Zerhouni EA. Role of magnetic resonance imaging in the management of lymphoma. In: Margulis AR, Gooding CA, eds. *Diagnostic Radiology*. Radiology and Research Foundation: University of California, San Francisco, 1987.
5. Zerhouni EA. CT/MRI of the mediastinum. In: Margulis AR, Gooding CA, eds. *Diagnostic Radiology*. Radiology and Research Foundation: University of California, San Francisco, 1987.
6. Zerhouni EA. CT of lung parenchyma. In: Margulis AR, Gooding CA, eds. *Diagnostic Radiology*. Radiology and Research Foundation: University of California, San Francisco, 1987.
7. Hunter WC, Zerhouni EA. Imaging distinct points in left ventricular myocardium to study regional wall deformation. In: Anderson JH, ed., *Innovations in Diagnostic Radiology*. Springer-Verlag, Berlin Heidelberg, 1989.
8. Zerhouni EA, Fishman EK. Computed tomography and tissue sampling procedures. In: Wang KP, ed., *Biopsy Techniques in Pulmonary Disorders*. New York: Raven Press, 1989.
9. Zerhouni EA. MRI of the Thorax. In: Stark and Bradley, eds., *Textbook of MRI*. Mosby, St. Louis, 1991.
10. Herold CJ, Zerhouni EA. The Mediastinum and Lungs. In: Higgins CB, Hricak H, Helms CA, eds. *Magnetic Resonance Imaging of the Body, 2nd ed.* New York: Raven Press, 1991.
11. Herold CJ, Zerhouni EA. The Mediastinum and Lungs. In: Higgins CB, Hricak H, Helms CA, eds. *Magnetic Resonance Imaging of the Body, 3rd ed.* New York: Raven Press, 1996.

Monographs

1. Zerhouni EA, ed. *CT and MRI of the Thorax*. New York: Churchill-Livingstone, 1990. Author of the following chapters:
Role of MRI in the management of thoracic lymphoma (with AD Rahmouni)
CT and MRI assessment of the mediastinum (with D Merine, ML Pessar, EK Fishman, and RL Soulen)
High resolution CT for evaluation of diffuse lung disease
CT and MRI of focal lung disease
2. Zerhouni EA, ed. *Cardiovascular MRI*. *Topics in MRI* Aspen Press, New York, 1990.
3. Naidich DP, Zerhouni EA, Siegelman SS, eds. *Computed Tomography and Magnetic Resonance of the Thorax, 2nd ed.* New York: Raven Press, 1991. Author of the following chapters:
Principles and Techniques of Thoracic CT and MR
Focal Lung Disease
Diffuse Lung Disease
Heart and Pericardium
4. Naidich DP, Webb WB, Muller NL, Krinsky GA, Zerhouni EA, Siegelman SS, eds. *Principles and Techniques of Thoracic CT and MR*. *Computed Tomography and Magnetic Resonance of the Thorax, 3rd ed.* New York: Lippincott-Raven Publishers, 1999.

Abstracts and Presentations at Peer-Reviewed Meetings (1993-1998)

1. Atalar E, McVeigh ER, Zerhouni EA. Coronary artery blood flow imaging using pre-saturation segmented k-space data acquisition. SMRM Twelfth Annual Scientific Meeting, August 1993, New York, NY.
2. Bazille A, Lima JAC, Judd RM, Schulman SP, McVeigh ER, Weiss JL, Zerhouni EA. Persistent MR contrast enhancement of reperfused myocardial infarction in humans. SMRM Twelfth Annual Scientific Meeting, August 1993, New York, NY.
3. Hardy CJ, Bolster B, McVeigh ER, Adams WJ, Darrow RD, Zerhouni EA. A 1D velocity technique for NMR measurement of aortic compliance. SMRM Twelfth Annual Scientific Meeting, August 1993, New York, NY.
4. McVeigh ER, Guttman MA, Chandrasekhar P, Moore CC, Zerhouni EA. A comprehensive cardiac analysis package for MR imaging data. SMRM Twelfth Annual Scientific Meeting, August 1993, New York, NY.
5. Judd RM, Atalar E, Reeder SB, McVeigh ER, Zerhouni EA. A pulse sequence with increased dynamic range and linear signal intensity for myocardial perfusion studies. SMRM Twelfth Annual Scientific Meeting, August 1993, New York, NY.
6. Bazille A, Guttman MA, McVeigh ER, Zerhouni EA. Segmentation of tagged cardiac MR images: effects on myocardial strain evaluation. RSNA, Chicago, Illinois, November 28-December 3, 1993.

7. Guttman MA, McVeigh ER, Zerhouni EA. Automated detection of striped radial tags for estimation of myocardial wall motion. RSNA, Chicago, Illinois, November 28-December 3, 1993.
8. Berg WA, Kuhlman JE, Chang BW, Zerhouni EA, Anderson ND. Residual silicone following removal of ruptured breast implants: MR imaging evaluation. RSNA, Chicago, Illinois, November 28-December 3, 1993.
9. Brown RH, Hirshman CA, Zerhouni EA. Mechanisms of nitric oxide bronchodilation elucidated with high resolution CT. RSNA, Chicago, Illinois, November 28-December 3, 1993.
10. Judd RM, Atalar E, Reeder SB, McVeigh ER, Zerhouni EA. Breath-hold steady state spoiled GRASS versus IR FLASH techniques in assessment of myocardial perfusion. RSNA, Chicago, Illinois, November 28-December 3, 1993.
11. Kuhlman JE, Romanchuk K, Steinberg EP, Zerhouni EA, Fishman EK. Determination of hepatic resectability: comparison of CT during arterial portography and contrast-enhanced MR imaging. RSNA, Chicago, Illinois, November 28-December 3, 1993.
12. Wood SA, Hoford JD, Zerhouni EA, Mitzner WA. Method for 3D segmentation and analysis of pulmonary vascular structures in situ. RSNA, Chicago, Illinois, November 28-December 3, 1993.
13. Zerhouni EA, Caudry D, Balfe D, Francis I, Moss A, Megibow A. Colorectal cancer: report of the radiology diagnostic oncology group II. RSNA, Chicago, Illinois, November 28-December 3, 1993.
14. Ma LD, Frassica F, Scott WW, Jr, Fishman EK, Zerhouni EA. MR imaging characteristics of benign and malignant musculoskeletal tumors. RSNA, Chicago, Illinois, November 28-December 3, 1993. (Exhibit)
15. Vining DJ, Pahdani AR, Wood S, Zerhouni EA, Fishman EK, Kuhlman JE. Virtual bronchoscopy: a new perspective for viewing the tracheobronchial tree. RSNA, Chicago, Illinois, November 28-December 3, 1993. (Exhibit)
16. Kuhlman JE, Fuentes-Bernardo DA, Padhani A, Ney DR, Zerhouni EA, Fishman EK. Spiral CT: new approaches to chest disorders. RSNA, Chicago, Illinois, November 28-December 3, 1993. (Exhibit)
17. Atalar E, McVeigh ER, Zerhouni EA. MR projection coronary angiography in a single breath-hold. Presented at 41st Annual Meeting of Association of University Radiologists, Cincinnati, May 1993.
18. Moore CC, McVeigh ER, Mebazaa A, Zerhouni EA. Use of striped radial tagging to measure three dimensional endocardial and epicardial thickening throughout the canine left ventricle during ischemia. SMRI Annual Meeting, Supplement to JMRI, San Francisco, May 1993.
19. O'Dell WG, Moore CC, McVeigh ER, Zerhouni EA. Displacement field fitting approach to calculate 3D deformations from parallel-tagged MR images. SMRI Annual Meeting, Supplement to JMRI, San Francisco, May 1993.
20. Moore CC, McVeigh ER, Zerhouni EA. Three-dimensional strain throughout the canine left ventricle during local graded ischemia: assessment by MR tagging. Presented at 41st Annual Meeting of Association of University Radiologists, Cincinnati, May 1993.
21. Judd RM, Atalay M, Reeder SB, McVeigh ER, Zerhouni EA. Evidence that myocardial water exchange rates cannot be considered fast for intravascular MR contrast agents. Proceedings of the Cardiovascular Science and Technology Conference, Washington, DC. December, 1993.
22. Judd RM, Atalar E, Reeder SB, McVeigh ER, Zerhouni EA: Breathhold steady state SPGR versus IR-FLASH in the assessment of myocardial perfusion. Radiology Suppl. 1993;189(P):272.

23. Judd RM, Lima JAC, Bazille A, Schulman SP, Atalar E, McVeigh ER, Weiss JL, Zerhouni EA: Increased extracellular volume in patients with infarcted, reperfused myocardium by contrast MRI. *Circulation Suppl.* 1993;88(4, part 2):I237.
24. Lima JAC, Judd RM, Zerhouni EA, Schulman SP, Bazille A, McVeigh ER, Shapiro EP, Weiss JL: Contrast enhanced ultrafast MRI demonstrates perfusion in infarcted myocardium supplied by patent coronary artery despite thallium defect. *Circulation Suppl.* 1993;88(4, part 2):I275.
25. Judd RM, Atalar E, Reeder SB, McVeigh ER, Zerhouni EA: A pulse sequence with increased dynamic range and linear signal intensity for myocardial perfusion studies. *SMRM Proceedings* 1993;2:625.
26. Perry L, Lima J, Herskowitz A, McVeigh E, MacGowan G, Zerhouni E, Bernac S, Rogers W, Shapiro E, Weiss J. Noninfarcted adjacent region dysfunction detected by 3D tagged MRI thickening persists long after myocardial infarction. *Circulation* 1993;88(4)II:I-82.
27. Lima JAC, Judd RM, Olivieri CL, Schulman SP, Atalar E, Zerhouni EA: Myocardial perfusion by contrast enhanced ultrafast MRI relates to myocardial damage in patients with acute myocardial infarction. *Proceed Soc Magn Res* 1994;1:109.
28. Judd RM, McVeigh ER, Zerhouni EA: Myocardial T2* during bolus administration of contrast. *Proceed Soc Magn Res* 1994;1:284.
29. May-Newman K, Judd RM, Zerhouni EA: Myocardial T1 during step changes in contrast concentration. *Proceed Soc Magn Res* 1994;1:1017.
30. J. J. Haberman, C. H. Lugo-Olivieri, J. A. C. Lima, M. A. Guttman, E. Atalar, and E. A. Zerhouni. The integrated cardiac MR examination. In Proc. of the 1994 Annual Mtg., New Orleans, April 1994. Amer. Roentgen Ray Soc.
31. P. Croisille, C. H. Lugo-Olivieri, E. G. Poon, M. A. Guttman, C. C. Moore, Y. Afework, E. Atalar, E. R. McVeigh, and E. A. Zerhouni. Segmentation of tagged myocardial images: black-blood versus white-blood techniques. In Proc. of the 2nd Sci. Mtg., San Francisco, August 1994. SMR.
32. Relvas MS, Bolster, Jr. BD, Hardy CJ, Zerhouni EA. Correlation between Aortic Diameter and Vessel Wall Distensibility using a Non-Invasive NMR Method. Second Annual Meeting of the Society of Magnetic Resonance, August 1994.
33. E. R. McVeigh, M. A. Guttman, E. G. Poon, P. Chandrasekhar, C. C. Moore, E. A. Zerhouni, M. Solaiyappan, and A. H. Pheng. Visualization and analysis of functional cardiac MRI data. In S. Acharya and E. A. Hoffman, editors, *Proc. on Medical Imaging 1994: Physiology and Function from Multidimensional Images*, volume 2168, pages 109#117. SPIE, 1994.
34. Atalay M, Reeder S, Zerhouni E, Forder J. Blood Oxygenation Dependence of Tissue Relaxation Parameters (T1 & T2) in the Isolated Perfused Rabbit Heart at 4.7T. *Proceedings of the Society of Magnetic Resonance in Medicine*. San Francisco, 1994; 854.

35. Atalay M, Zerhouni E, Forder J. Relationship Between Regional Oxygen Content and MRI Signal Intensity in the Isolated Rabbit Heart: Assessment Under Control Conditions and in the Setting of Regional Ischemia. Proceedings of the American Heart Association. Dallas, TX, 1994.
36. Judd RM, Atalay MK, Zerhouni EA. Mechanisms of myocardial T1 enhancement after bolus administration of contrast agent. *J Magn Res Imag* 1994;4(P):S10.
37. Tang C, Atalar E, McVeigh E, Zerhouni E. Multiphase multislice myocardial tagging and a single breath-hold using echo-planar imaging. Twelfth Annual Meeting of the SMRI, *J. Magn. Reson. Imag.* 4(P), WIP pg. S7 (1994).
38. Relvas MS, Bolster, Jr. BD, Hardy CJ, Zerhouni EA. Evaluation of Aortic Disease by Noninvasive MR Measurement of Vessel Wall Distensibility. First Annual Meeting of the Society of Magnetic Resonance, *J. Magn. Reson. Imag.*, 4(P), pS30, (1994).
39. Lugo-Olivieri CH, Moore CC, Poon EG-C, Lima JAC, McVeigh ER, Zerhouni EA. Temporal Evolution of three dimensional deformation in the ischemic left ventricle: assessment by MR tagging. SMR, August 1994.
40. Roberts JW, Lima JAC, Judd RM, Lugo-Olivieri C, Zerhouni EA. Altered contrast washin/washout kinetics in chronic human infarcts is proportional to transmural fibrous involvement. AHA Meeting, November, 1994.
41. Lima JAC, Judd RM, Schulman SP, Atalar E, Lugo-Olivieri C, Zerhouni EA. Capillary damage within human infarcts assessed by contrast enhanced MRI indexes greater myocardial dysfunction and greater myocardial loss. AHA Meeting, November, 1994.
42. Lima JAC, Judd RM, Lugo-Olivieri C, Schulman SP, Atalar E, Gerstenblith G, Zerhouni EA. Myocardial perfusion pattern by contrast enhanced MRI in the acute post-infarct period can predict myocardial necrosis and eventual extent of scar formation in humans. AHA Meeting, November, 1994.
43. Lugo-Olivieri CH, Moore CC, Guttman MA, Lima JAC, McVeigh ER, Zerhouni EA. The effects of ischemia on the temporal evolution of radial myocardial deformation in humans. RSNA 1994.
44. Atalar E, Croisille P, Tang C, McVeigh ER, Zerhouni EA. High resolution imaging of brain with multishot echo planar imaging. RSNA, Chicago, 1994.
45. P. Croisille, C. C. Moore, E. G. Poon, M. A. Guttman, E. R. McVeigh, and E. A. Zerhouni. Variability of wall thickening measurement in the normal left ventricle: Comparison of tagged and non-taggedMR techniques. To appear in AHA 67th Sci. Sessions, November 1994.

46. Croisille P, Moore CC, Poon EG-C, Lugo-Olivieri CH, McVeigh ER, Zerhouni EA. Tagged vs non-tagged myocardial wall thickening in normal humans: assessment of variability. RSNA 1994.
47. E. Atalar, P.A. Bottomley, E.A. Zerhouni. Microscopic MR imaging and spectroscopy of the arterial wall with an intravascular probe. RSNA 1995.
48. D. A. Bluemke, M.A. Petri, E. A. Zerhouni. MR imaging and MR spectroscopy measurement of femoral head perfusion and composition in patients at risk for avascular necrosis. RSNA 1995.
49. K.M. Horton, C.H. Lugo-Olivieri, L. Lee, B. Jones, E.A. Zerhouni. Tagged cine MR imaging of the oropharyngeal muscles during swallowing and phonation: method development. RSNA 1995.
50. W.G. O'Dell, C.C. Moore, E.A. Zerhouni, E.R. McVeigh. Spatial resolution of 3D cardiac tagging reconstruction: impulse response analysis for displacement field-fitting. SMR 1995.
51. C.C. Moore, C.H. Lugo-Olivieri, L. Lee, J.A.C. Lima, E.R. McVeigh, E.A. Zerhouni. 3D deformation of the normal human left ventricle: assessment by MR tissue tagging. SMR 1995.
52. L.D. Ma, F. J. Frassica, E.A. McCarthy, D. A. Bluemke, E.A. Zerhouni. MRI assessment of musculoskeletal tumors: role of dynamic Gd-DTPA enhancement. SMR 1995.
53. E. Atalar, E.A. Zerhouni. A phased array coil for in-vivo microscopic MR imaging of breast lesions. SMR 1995.
54. E. Atalar, P. A. Bottomley, E.A. Zerhouni. A flexible catheter coil for imaging and spectroscopy of atherosclerotic plaques. SMR 1995.
55. M.A. Guttman, E.A. Zerhouni, E. R. McVeigh. Fast, contourless tag segmentation and displacement estimation for analysis of myocardial motion. SMR 1995.
56. M.K. Atalay, S.B. Reeder, E.R. McVeigh, E.A. Zerhouni, J.R. Forder. Non-invasive quantitation of myocardial perfusion using spin labelling: an approach exploiting coronary vessel geometry. SMR 1995.
57. D.A. Bluemke, M. Petri, E.A. Zerhouni. Femoral head bone marrow: perfusion and marrow composition in patients at risk for avascular necrosis. SMR 1995.
58. J.A.C. Lima, K.C. Wu, C. Lugo-Olivieri, R. M. Judd, R. Blumenthal, S. Schulman, E.A. Zerhouni. No-reflow regions by contrast enhanced MRI in the acute post-myocardial infarct period predict recurrent cardiovascular events. SMR 1995.

59. E. A. Zerhouni. Functional MRI of the Heart. SMR 1995.
60. R.M. Judd, C.H. Lugo-Olivieri, M. Arai, T. Kondo, P. Croisille, J.A.C. Lima, V. Mohan, L.C. Becker, E.A. Zerhouni. Relationship of myocardial MR contrast enhancement patterns to risk, infarct, and no-reflow regions in two-day-old reperfused canine infarcts. SMR 1995.
61. P. Croisille, Y. Afework, C. Moore, R.M. Judd, J.A.C. Lima, C. Lugo-Olivieri, M. Arai, L.C. Becker, E.A. Zerhouni. Identification of ischemic but viable myocardium with low-dose dobutamine stress 3D tagged MRI. SMR 1995.
62. B.D. Bolster Jr., E. Atalar, E.R. McVeigh, E. A. Zerhouni. Theoretical limits for MR measurement of wavespeed velocities using the one-dimensional NMR technique. SMR 1995.
63. D. Bluemke, L.D. Ma, E.A. Zerhouni. Avascular necrosis versus osteomyelitis in high-risk patients: MR imaging differentiation. RSNA 1996.
64. D. Bluemke, E.A. Zerhouni, E.R. McVeigh, R. L. Wolf. Fast SE MR venography: development and applications. RSNA 1996.
65. D.A. Bluemke, E.A. Zerhouni, T.J. Mosher, E. Atalar. Aortic vasculopathy: evaluation with breath-hold segmented k-space acquisition. RSNA 1996.
66. C.H. Lugo-Olivieri, C.C. Moore, M.A. Guttman, J.A. Lima, E.R. McVeigh, E.A. Zerhouni. Variability of 3D myocardial deformation in a healthy human population: assessment with MR tissue tagging. RSNA 1996.
67. L.D. Ma, F. J. Frassica, E.F. McCarthy, D.A. Bluemke, E.A. Zerhouni. Importance of rim-to-center differential enhancement ratios in the MR imaging differentiation of benign and malignant lesions. RSNA 1996.
68. L.D. Ma, F. J. Frassica, E.F. McCarthy, D.A. Bluemke, E.A. Zerhouni. MR imaging of musculoskeletal tumors: pitfalls in the evaluation of "cystic"-appearing lesions. RSNA 1996.
69. E.R. McVeigh, M. Solaiyappan, P. Heng, M.A. Guttman, E.A. Zerhouni. Direct 4D visualization of myocardial deformation. RSNA 1996.
70. T.J. Mosher, D.A. Bluemke, E.K. Fishman, E.A. Zerhouni, M.P. Schoenberg, M. Eisenberger. Bladder carcinoma: role of MR imaging and CT in multimodality treatment planning. RSNA 1996.
71. Zerhouni E.A., Pettigrew R.I., Grist T.M., Herfkens R.J. Special Focus Session: Cardiac MR: To Be or Not to Be? RSNA 1996.
72. E. Atalar, E.A. Zerhouni, P.J. Pasricha. Ultra-high resolution imaging of esophageal wall using a quadrature detector placed within gut. SMR 1996.

73. R.J. Kim, J.A.C. Lima, E-L. Chen, S.B. Reeder, E.A. Zerhouni, R.M. Judd. Myocardial sodium content of acute reperfused infarction: potential of fast ^{23}Na MRI to examine regional myocardial viability. SMR 1996.
74. L. Correia, E. Atalar, M. Kelemen, O. Ocali, G. Hutchins, J. Flag, G. Gerstenblith, E. Zerhouni, J. Lima. Human atherosclerotic burden and plaque composition evaluated by in vitro intravascular magnetic resonance imaging. SMR 1996.
75. S. Kawamoto, D. A. Bluemke, E.A. Zerhouni. MRI of the thoracoabdominal aorta in Marfan syndrome: progression of vasculopathy following surgical repair. SMR 1996.
76. D. A. Bluemke, I. Tani, S. Tachiki, E.A. Zerhouni. MR venography of the extremities: small vessel evaluation using fast-spin echo imaging. SMR 1996.
77. L.D. Ma, F.J. Frassica, E.A. McCarthy, D.A. Bluemke, E.A.Zerhouni. MRI differentiation of benign and malignant musculoskeletal tumors using differential intratumoral Gd-DTPA enhancement ratios. SMR 1996.
78. D.A. Bluemke, M. Petri, E.A. Zerhouni. Femoral head bone marrow composition: assessment using localized proton NMR spectroscopy. SMR 1996.
79. J.L. Boxerman, S.B. Reeder, E. A. Zerhouni. Standard vs. centric semented k-space phase endociding: SNR comparison in breath-hold SPGR cardiac imaging. ISMRM 1997.
80. D. Rubin, K. Falk, M. Sperling, B. Rothman, E. Zerhouni, D. Stark, E. Outwater, U. Schmiedl, L. Kirby, J. Chezmar, T. Coates, M. Chang, J.M. Silverman, N. Rofsky, K. Burnett, M. Ross, S. Saini, J. Engel, S.W. Young. A Multi-center trial of GADOLITE® oral suspension as a contrast agent for magnetic resonance imaging. ISMRM 1997.
81. G. Revelon, D. Artemov, Z. Bhujwalla, E. Atalar, R. Brem, E. Zerhouni, D.A. Bluemke. *In vivo* microscopic MR imaging of breast lesions. ISMRM 1998.
82. D. Artemov, G. Revelon, E. Atalar, D.A. Bluemke, Z.M. Bhujwalla, E.A. Zerhouni. Switchable 12 element coil array for MR microimaging of breast lesions. ISMRM 1998.
83. D.L. Kraitchman, D.A. Bluemke, H.B. Hillenbrand, I. Ozanur, J.A.C. Lima, E.R. McVeigh, E.A. Zerhouni. Evidence of myocardial stunning from non-critical coronary flow reduction assessed noninvasively with MRI. ISMRM 1998.

Invited Lectures (1995-2001)

International:

27th International Course in Diagnostic Radiology (Switzerland), 1995

Radiology Today, Salzburg, Austria, June 1995

NASCI Annual Meeting, Nice, France, August 1995

SMRI Meeting, Nice, France, August 1995

Journées Francaises de Radiologie Course, Paris, France, October 1995

Garmisch Meeting, Munich, Germany, January 1995

The Comprehensive Cardiac MR Exam: Current Status
Contrast Enhanced Tagged MRI in Reperfused Infarction

28th International Course in Diagnostic Radiology (Switzerland), 1996

Radiology Today, Salzburg, Austria, June 1996

Fleischner Society Meeting, Vancouver, Canada, June 1996

Nuclear Oncology Meeting, Naples, Italy, September 1996
Role of MRI

The 37th Annual Meeting of the Japan Lung Cancer Society , Kobe, October 1996
Imaging of Mediastinal Malignancies

Impact of Molecular Biology & New Technical Developments on Diagnostic Imaging, Berlin, Germany, December 1996

Integrated Imaging of the Heart, Vessels and Tumor

Garmisch Meeting, Munich, Germany, January 1997
Advances in MR of the Heart

NICER Course, Beijing Hospital, China, May, 1997

Fleischner Society Meeting, London, England, June 1997
27th Annual Course Lecture

Schering STAR Program, Jakarta/Kuala Lumpur Symposia, Indonesia
July 30-August 3, 1997

Radiology Today, Salzburg, Austria, June 1998

Schering STAR Program Johannesburg/Cape Town Symposia, South Africa
August 29-September 3, 1998

Schering AG International Expert Forum, Unmet Diagnostic Needs in Oncology, Berlin, Germany, September 1998

University Hospital of Vienna/AKH Symposium, Paradigm Shifts in Diagnostic Radiology:
Trends Towards the Next Millennium, Vienna, Austria, November 1998
Major Trends in Radiology Research

Garmisch Meeting, Munich, Germany, January 1999
Radiology Research: Trends in the Early 21st Century
European Society of Gastrointestinal and Abdominal Radiology (ESGAR) Tenth Annual
Meeting and Postgraduate Course, Tubingen, Germany, June 1999
Perspectives for Radiology Research

Third International Symposium on the Costs and Benefits of Radiology, Berlin,
Germany, August 19-21, 1999

Algerian Society of Thoracic Oncology Meeting, Algiers, Algeria, April 12-13,
2000
Imaging in Lung Cancer

Fourth State-of-the-Art Interdisciplinary Review Course of Thoracic and Critical
Care Medicine, Athens, Greece, April 14-16, 2000
CT/MR of Lung Cancer
High Resolution CT Principles
CT of Focal Lung Disease

Fleischner Society Meeting, Kobe, Japan, May 2000

Fourth Joint International Cancer Conference, Naples, Italy, September 24-27,
2000
Pre-Therapeutic Imaging Evaluation in Lung Cancer

Turkish National Radiological Congress, Istanbul, Turkey, October 28-31, 2000
New Horizons in Cardiac MR Imaging
Cardiac Tagging

Third JSMRM International Symposium, Tokyo, Japan, January 20-21, 2001
Perspectives in Cardiovascular Magnetic Resonance Imaging

National:

Fleischner Society, "Basics of Mediastinal MRI" (Orlando, FL), 1995

Cross Sectional Imaging, Puerto Rico, January 1995

CT—The Cutting Edge, Orlando, Florida, February 1995
(Johns Hopkins Course)

American Roentgen Ray Society, Washington, DC, April 30-May 5, 1995

Radiology Centennial Commemorative Conference, National Institutes of Health,
Bethesda, MD, May 1995

SCBT/MR Meeting, New York, NY, May 1995

MRI of the Mediastinum

Cardiac MRI

MRI of the Thorax: Critical Appraisal

Course Co-Director and speaker, Principles and Practice of Clinical MRI, (Washington, DC)
June, 1995.

Spiral CT Course, Santa Fe, New Mexico, July 1995

(Johns Hopkins Course)

Radiological Society of North America (Chicago, IL), 1995

Plenary Lecture: Integrated Functional MR of the Heart: Current Status

Refresher Course: Clinical applications of chest CT: critical appraisal of conventional,
high-resolution, and spiral CT. Kuhlman JE, Zerhouni EA, RSNA, Chicago, Illinois ,
November 26-December 1, 1995.

Refresher Course: RDOG (Radiology Diagnostic Oncology Group) Update (Part 2):
Colorectal Cancer. Zerhouni EA. RSNA, Chicago, Illinois, November 26-December 1,
1995.

Vail Creative Concepts Conference , Vail, Colorado, December 1995

American Heart Association, San Francisco, CA, January 1996
Myocardial Tagging-Techniques & Applications

MR Scientific Program Committee Meeting, McLean, VA, February 1996

CT—The Cutting Edge, Orlando, Florida, February 1996
(Johns Hopkins Course)

Spiral CT Course, Santa Fe, New Mexico, July 1996
(Johns Hopkins Course)

Grantsmanship Workshop, "From the Unfunded to the Funded Radiology Investigator"
Washington, DC, October 1996

Refresher Course: Clinical applications of chest CT: critical appraisal of conventional, high-resolution, and spiral CT. Kuhlman JE, Zerhouni EA. RSNA, Chicago, Illinois, December 1-6, 1996.

Course Co-Director and speaker, Principles and Practice of Clinical MRI, Amelia Island, FL , February 29-March 3, 1996.

CT—The Cutting Edge, Orlando, Florida, February 1997
(Johns Hopkins Course)

Course Co-Director and speaker, Principles and Practice of Clinical MRI, Marco Island, FL , March 13-16, 1997.

New York Roentgen Society Spring Conference, New York, NY, April 1997
Fifth Annual Advanced Topics in CT Course, Santa Fe, NM, July 1997

Vail Creative Concepts Conference, Colorado, December 1997

CT—The Cutting Edge, Orlando, Florida, February 1998
(Johns Hopkins Course)

Course Co-Director and speaker, Principles and Practice of Clinical MRI, Marco Island, FL , March 12-15, 1998.

Fleischner Society Meeting ,Washington, DC, April 1998

Sixth Annual Advanced Topics in CT Course, Santa Fe, NM, July 1998

Opening Session on Cardiac Imaging: Functional Cardiac MR Imaging. RSNA, Chicago, Illinois, November 29-December 4, 1998.

Refresher Course: Entrepreneurship and Marketing for Radiologists. Zerhouni EA, Schaffer DL. RSNA, Chicago, Illinois, November 29-December 4, 1998.

Special Focus Session: Molecular Imaging: Opportunities for Radiologists. Brady T, Zerhouni EA-Co-Moderators. RSNA, Chicago, Illinois, November 29-December 4, 1998.

Introduction to Research: Relationship Between Research & Entrepreneurship for Academic Radiologists. RSNA/AUR/ARRS, Chicago Illinois, November 29-December 4, 1998.

Vail Creative Concepts Conference, Colorado, December 1998

CT—The Cutting Edge, Orlando, Florida, February 1999
(Johns Hopkins Course)

Course Co-Director and speaker, Principles and Practice of Clinical MRI, Marco Island, FL , March 11-14, 1999

The Johns Hopkins Convocation in Southern California and San Francisco, CA, March 20-21, 1999

Fleischner Society Meeting ,Tucson, Arizona, April 1999

Seventh Annual Advanced Topics in CT Course, Santa Fe, NM, July 1999

Refresher Course: Entrepreneurship and Marketing for Radiologists. Zerhouni, EA, Schaffer DL. RSNA, Chicago, Illinois, November 28-December 3, 1999.

Vail Creative Concepts Conference, Colorado, December 1999

CT—The Cutting Edge, Orlando, Florida, February 2000
(Johns Hopkins Course)

Course Co-Director and speaker, Principles and Practice of Clinical MRI, Marco Island, FL, March 2-12, 2000.

American Roentgen Ray Society Spring Conference, Washington, DC, May 2000

First Annual Molecular Imaging Workshop, Michigan State University, Lansing, Michigan, July 2000

Eighth Annual Advanced Topics in CT Scanning, Lake Tahoe, Nevada, July 2000

Fall Meeting of the Society of Chairmen of Academic Radiology Departments (SCARD), New York, NY, Sept. 23-27, 2000
Manpower Issues in Radiology

CT—The Cutting edge, Orlando, Florida, February 2001
(Johns Hopkins Course)

Course Co-Director and speaker, Principles and Practice of Clinical MRI, Marco Island, FL., March 15-18, 2001

Visiting Professor/Guest Lecturer:

Visiting Professor—Michigan State University, (Lansing, Michigan), 1995.

Invited Speaker—12th John S. Dunn, R. Lectureship, Houston Radiological Society (Houston, TX), January 22, 1996.

Invited Speaker—Third Annual Cardiac Radiology Review (Philadelphia, PA), 1996.

Invited Speaker—Veterans General Hospital, Taipai, Taiwan, October 1996.

Invited Speaker—Samsung Medical Center, Seoul, Korea, October 1996.

Invited Speaker—Philip J. Hodes Lectureship, Thomas Jefferson University (Philadelphia, Pennsylvania), May 12, 1998.

Invited Speaker—Weinstein Memorial Lecture, Suburban Hospital (Bethesda, MD) May 1999

Invited Speaker—Castellino Lecture, Memorial Sloan-Kettering Cancer Center (New York, NY) April 2000.

Invited Speaker—Evan's Lecture, Cornell University (New York, NY) May 2000.

Invited Speaker—Merrill C. Sosman Lecture, Brigham and Women's Hospital (Boston, MA) March 2001.

Invited Speaker—Godfrey Hounsfield Lecture, European Congress and Association of Radiology (Vienna, Austria) March 2002.